June 30, 1931. H. E. GOSCH 1,812,291

APPARATUS FOR IMPREGNATING BUNDLES OF SHINGLES AND THE LIKE

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Fig. 2.

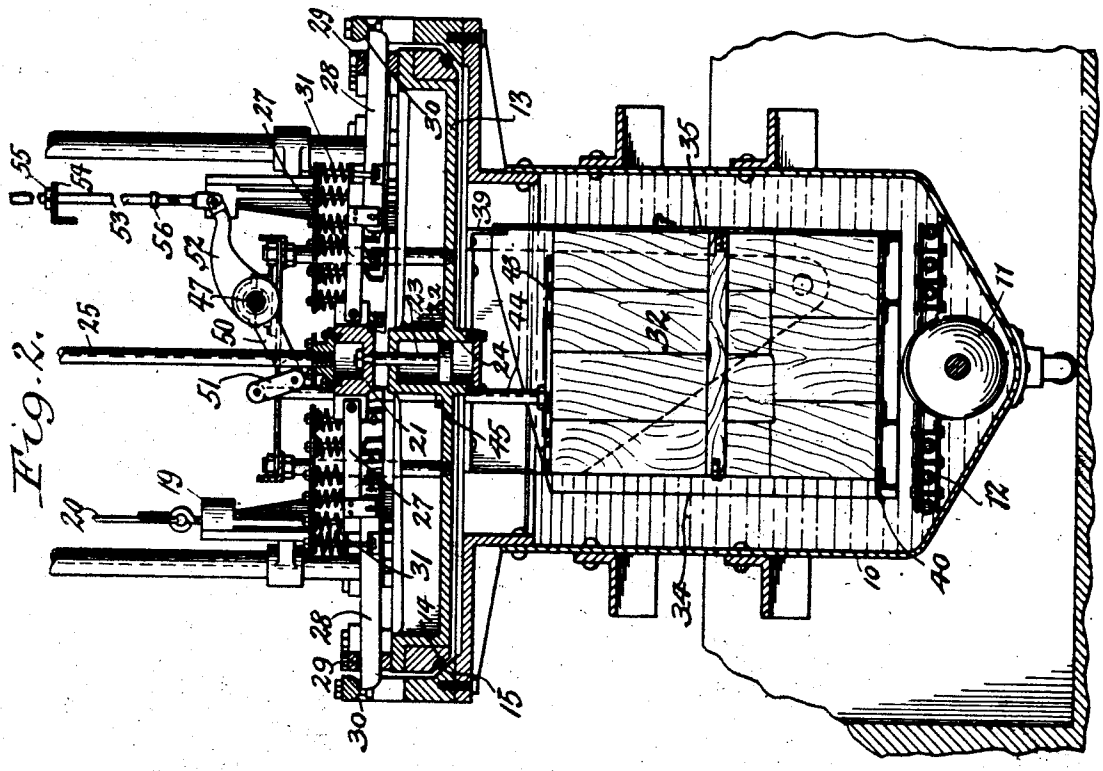
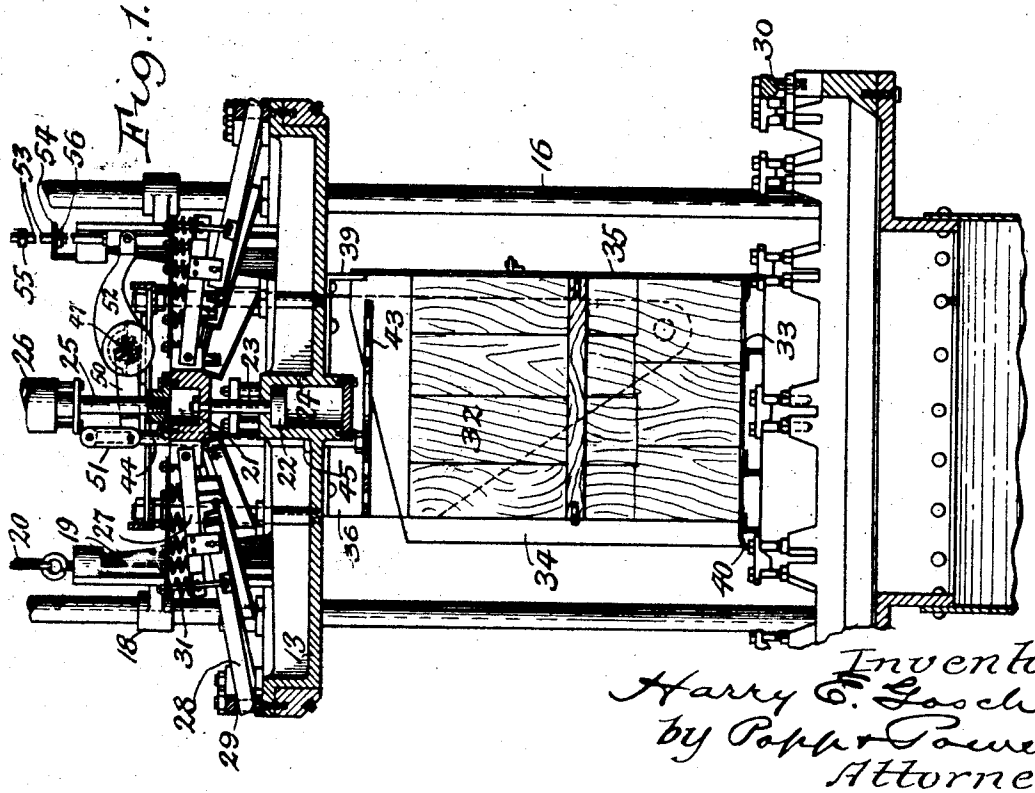


Fig. 1.



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Fig. 4.

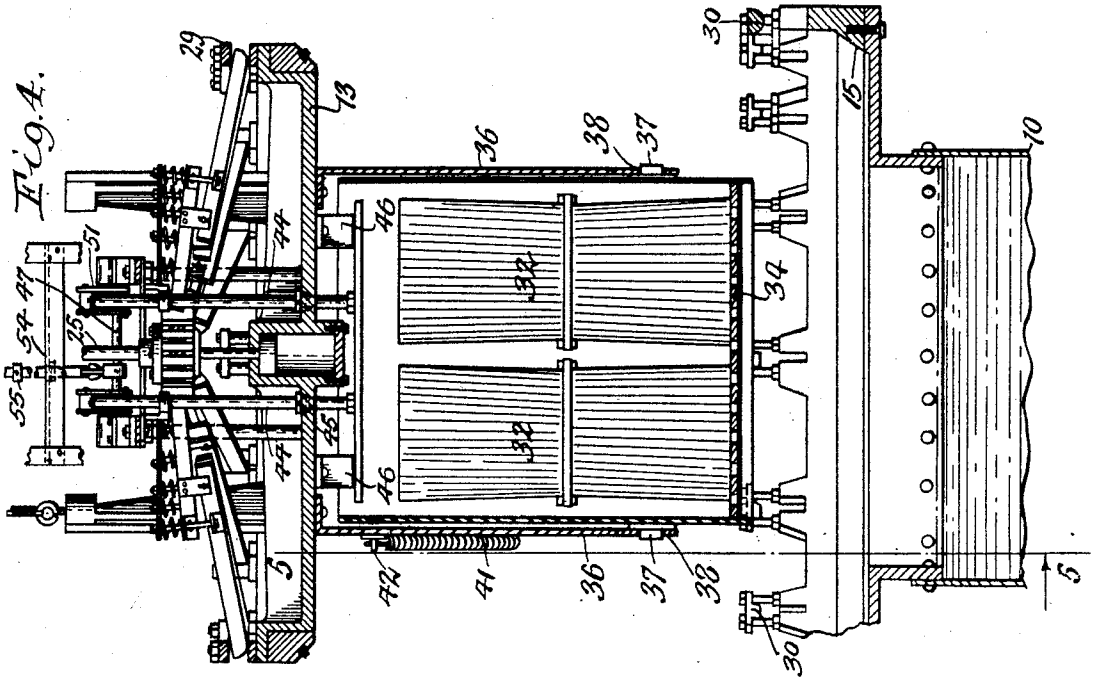
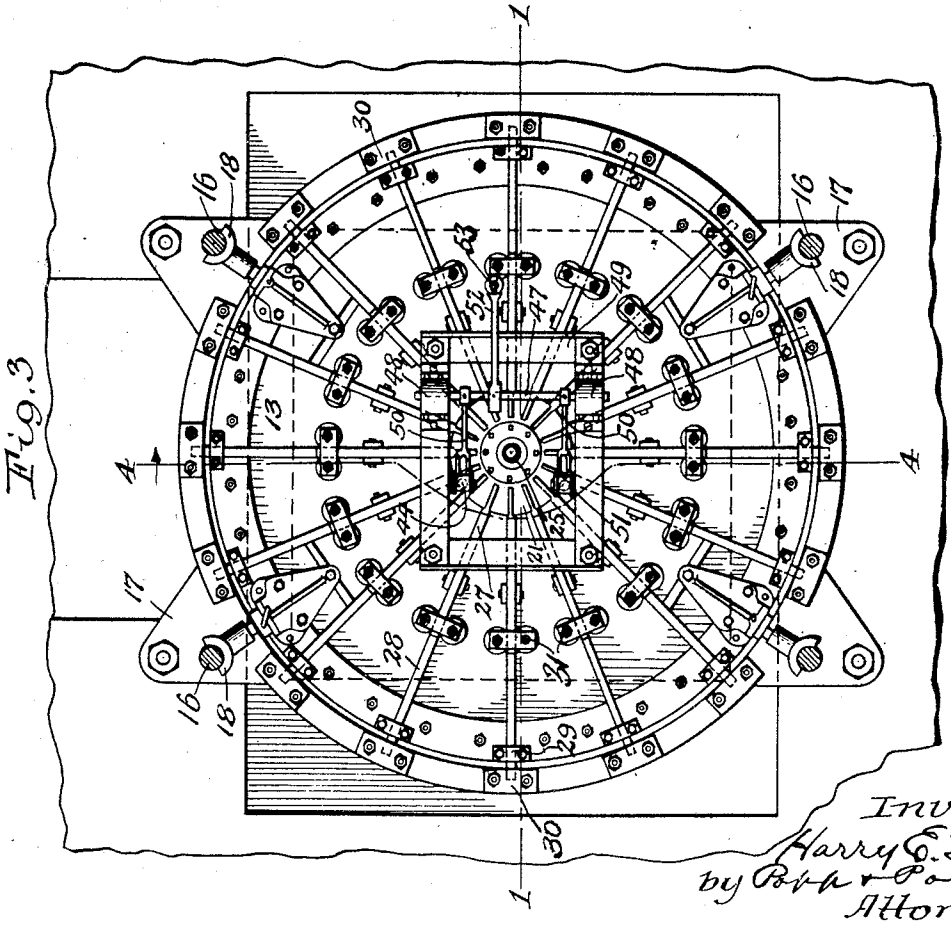


Fig. 3

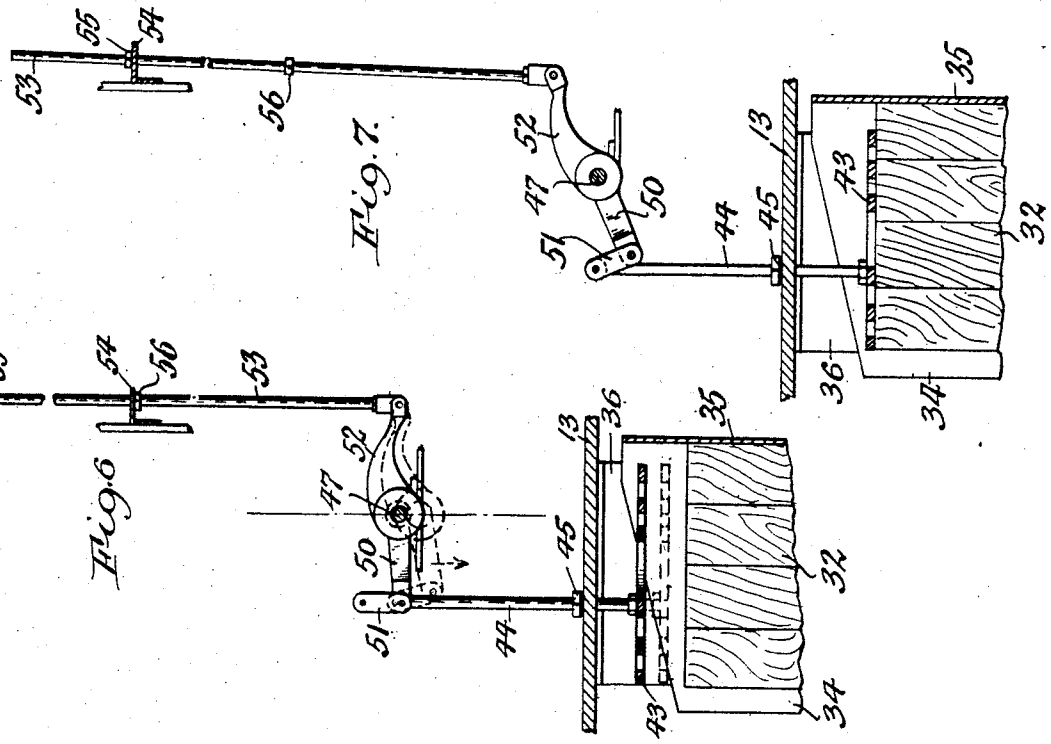


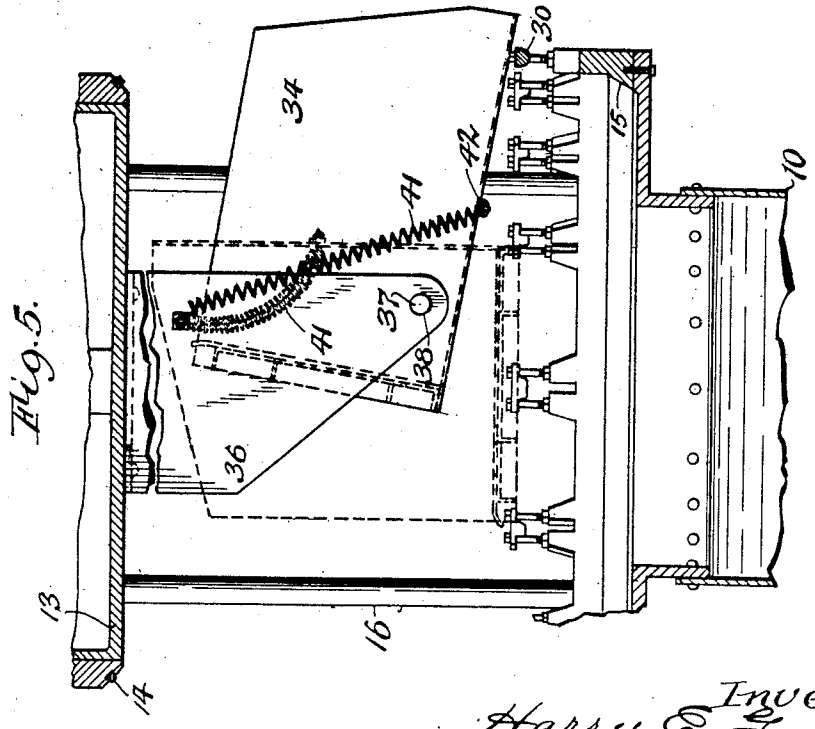
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Patented June 30, 1931

1,812,291

UNITED STATES PATENT OFFICE

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APPARATUS FOR IMPREGNATING BUNDLES OF SHINGLES AND THE LIKE

Application filed January 18, 1929. Serial No. 333,422.

This invention relates to an apparatus for impregnating, coating or staining bundles of shingles or similar articles, this improvement being more particularly applicable to an apparatus of the type shown in the application for U. S. Letters Patent Ser. No. 274,783 filed May 3, 1928.

One of the objects of this invention is to provide an improved form of basket or container which is adapted to receive and hold the bundles of shingles while the same are dipped in the liquid with which the bundles are impregnated, coated or stained and also to permit more conveniently discharging the bundles from this basket after the dipping operation as well as simplifying the construction.

A further object of this invention is to provide means for preventing the bundles of shingles while being lowered with the basket into the impregnating, coating or staining liquid, from floating out of place, and to so organize this holding mechanism that the same will be operated automatically upon lowering the basket into the liquid containing tank and raising the same therefrom.

Another object of this invention is to so organize the impregnating apparatus that the same is lighter and more compact, also contains less parts which require manipulation for handling the bundles of shingles, and also enables the operation of staining, coating or impregnating the bundles of shingles to be accomplished more expeditiously.

In the accompanying drawings:—

Figure 1 is a fragmentary, vertical, longitudinal section of the apparatus showing the dipping tank open and the bundle receiving basket in its elevated position, taken on line 1—1 of Fig. 3.

Figure 2 is a similar view showing the dipping tank closed and the bundle carrying basket in its lowered position.

Figure 3 is a top plan view, partly in section, of the machine.

Figure 4 is a cross section of the machine taken on line 4—4 Fig. 3 and showing the bundle carrying basket in its elevated position.

Figure 5 is a fragmentary vertical section taken on line 5—5 Fig. 4 and showing the bundle carrying basket elevated out of the dipping tank and tilted to one side for the purpose of discharging a finished bundle of shingles therefrom.

Figure 6 is a fragmentary vertical section similar to Fig. 1 and showing the inoperative position of the mechanism whereby the bundles are held down in the basket.

Figure 7 is a view similar to Fig. 6 but showing the bundle holding mechanism in its operative position.

In the following description similar characters of reference indicate like parts in the several figures of the drawings.

The numeral 10 represents the tank or chamber which is adapted to contain a body of liquid with which the bundles of shingles or similar articles are to be stained, painted or impregnated, which liquid may be supplied to this tank and withdrawn therefrom in any suitable manner, but preferably in the manner indicated in the above mentioned application.

In the lower part of this tank the same is preferably provided with an agitator consisting of a rotary screw propeller 11 and also with means for heating the liquid such, for example, as a coil of pipe 12 through which steam, hot water or other heating medium may be conducted. The bottom of this tank is closed but the upper end of the same is open so as to permit of introducing the bundles of shingles into the liquid and removing the same therefrom. The inlet at the upper end of this tank is adapted to be covered and uncovered by a vertically movable cover 13 which is provided at its edge with a packing 14 adapted to engage with a seat 15 at the upper end of the tank for the purpose of forming a tight joint between this cover and the tank so that air pressure may be applied to the interior of the tank for driving the liquid contained in the tank into the pores of the shingles and also permit a vacuum to be produced in this tank for withdrawing any moisture from the bundles of shingles before they are dipped and also to withdraw any excess staining, painting or impregnating liquid

from the shingles after they have been dipped.

This cover may be raised and lowered by any suitable means and also guided during this movement so that the same can be properly engaged with and disengaged from the upper end of the tank. It is preferable to employ as the guiding means for the cover a plurality of upright guide rods 16 which extend upwardly from laterally projecting arms 17 at the side of the tank and guide shoes 18 mounted on upwardly projecting brackets or posts 19 on the cover and engaging with the respective guide rods 16.

The weight of the cover is preferably counterbalanced to facilitate raising and lowering of the same by means of counterbalancing cords or lines 20 connected with the upper ends of the posts 19 and connected with suitable counterbalancing weights as shown in the above mentioned application.

The raising and lowering of the cover 13 is preferably effected by means which are associated with the means whereby the cover is locked and unlocked relatively to the upper end of the tank. This lifting means in the preferred construction consists of a vertically movable lifting head 21 arranged centrally over the cover and guided relatively thereto by means of a guide piston 22 connected with the underside of the lifting head by means of a vertical rod 23 and sliding in a vertical cylinder 24 on the central part of the cover, as shown in Figs. 1, 2, and 4, and a lifting rod 25 connected at its lower end with the lifting head 21 and provided at its upper end with a piston which is arranged within a motor cylinder 26 so that upon admitting a pressure medium alternately into opposite ends of this cylinder the rod 25 together with the parts associated therewith will be raised and lowered and the cover which is operatively connected therewith will be opened and closed relative to the tank.

The locking means associated with this lifting mechanism preferably comprises a plurality of sectional locking levers each of which includes an inner section 27 pivoted on the head 21, an outer section 28 guided in a loop 29 on the margin of the cover and engaged with a locking loop 30 on the marginal part of the tank, and a spring device 31 which yieldingly connects the inner and outer sections of each lever.

In the raised position of the cover and the lifting head 21 the outer ends of the outer locking lever sections 28 are withdrawn from the locking loops 30 and are arranged within the guide loops 29 of the cover.

Upon lowering the cover the outer extremities of the locking levers remain in this retracted position until the cover is seated on the upper end of the tank and thereafter during the continued downward movement of the lifting head 29 the locking levers are straightened into horizontal position so that the outer extremities thereof slide outwardly into engagement with the locking loops 30, as shown in Fig. 2, thereby holding the cover in its closed position on the tank.

On the underside of the cover is mounted a basket which is adapted to receive the bundles of shingles 32 or other article which is to be impregnated, coated or stained. This basket in its preferred form consists of a bottom 33 which is of skeleton, grate-like or open-work form, two longitudinal side walls 34 which are preferably made of imperforate sheet metal, and a rear wall 35 which is also preferably made of imperforate sheet metal, said bottom, side walls and rear wall being immovably connected so that they will be shifted as an integral unit during the operation of the machine. This basket is open on its front side so as to permit of introducing the bundles to be treated into the basket while the latter is in an upright position, and this basket is also open at the top so as to permit the discharge of the bundles therefrom upon tipping the basket rearwardly after the bundles therein have been treated by the liquid in the tank. In order to permit of thus shifting the basket relative to the cover and the tank the same is pivotally mounted upon the underside of the cover so as to be capable of swinging about a horizontal transverse axis.

The means shown in the drawings for accomplishing this preferably consists of two hangers 38 depending from the under side of the cover adjacent to the outer sides of the longitudinal walls 34 of the basket, and each of these hangers being pivotally connected at its lower end with the basket by a trunnion 37 projecting laterally from the lower part of the adjacent side wall 34 of the basket into a bearing or opening 38 at the lower end of the respective hanger 36, as shown in Figs. 1, 2, 4 and 5.

The axis of the trunnions 37 is arranged in rear of the center of gravity of the basket which is about midway between the front and rear sides of the basket, so that the weight of the basket when in its upright position tends to constantly turn the upper end thereof forwardly and maintain the upper end of the rear wall 35 by gravity in engagement with a stop 39 which depends from the underside of the cover 13.

While the basket is in this upright position and elevated above the tank the bundles of shingles 32 are pushed into the same through the open front side thereof. In order to guide the bundles over the bottom of the basket the front edge of the latter is provided with a downwardly curved or turned guide lip 40 which when engaged by the lower end of the bundles will direct the latter into the basket.

The bundles are preferably placed in the

basket in a position in which the shingles are arranged with their length vertically and one end of each bundle rests on the bottom of the basket inasmuch as the bundles while in this position can be handled much more easily than if they rest with their sides against the bottom of the basket.

After the bundles have been thus placed within the basket the cover is lowered so that the basket containing the shingles is submerged in the liquid within the tank, and after the bundles have been subjected to the treatment for impregnating, painting or staining them as desired, the cover is again lifted so that the basket lifts the treated bundles of shingles out of the liquid. When the cover reaches its highest position the attendant pushes the upper end of the basket rearwardly so that the same turns about the axis of the trunnions 37 until the upper end of the basket projects laterally and in an inclined position over the side of the tank, as shown in Fig. 5, thereby causing the bundles of shingles within the basket to be discharged rearwardly therefrom.

In order to prevent this turning of the basket when lowered with the shingles from being attended with a shock, the descent of the upper part of the basket is preferably cushioned or counterbalanced so that this movement can be effected without undue jarring of the apparatus. The preferred means for this purpose which are shown in the drawings, consist of a spring 41 arranged along the outer side of one of the hangers 36 and connected at one end with the outer side of this hanger, while its opposite end is connected with the adjacent part of the basket between its upper end and the respective trunnion 37, as shown at 42 in Fig. 5.

When the basket is in its upright position this counterbalancing or cushioning spring 41 is contracted, as shown by dotted lines in Fig. 5, but when the basket is tilted or tipped rearwardly for discharging the bundles therefrom this spring is stretched, as shown by full lines in Fig. 5, thereby absorbing the shock which otherwise will be produced when tilting the basket while containing the load.

It has been found in practice that when the basket and the bundles of shingles to be stained, painted or impregnated are lowered into the liquid, that the same will float in the liquid and become displaced in the basket and thereby not only interfere with the convenient handling of the bundles but also interfere with the thorough impregnating or staining of the same.

In order to prevent the bundles from thus rising in the basket or floating in the liquid, means are provided whereby the bundles are held down against the bottom of the basket, which means are preferably so organized that when the basket is in its elevated position the holding means will be disengaged from the shingles and permit the free introduction of bundles into the basket as well as the delivery therefrom, but when the basket is lowered into the liquid the holding means will be engaged with the top of the bundles and prevent them from rising.

The preferred form of holding means shown in the drawings is constructed as follows:—

The numeral 43 represents a presser which is arranged below the cover of the tank and is adapted to move vertically toward the top of the bundles which are arranged within the basket. This presser may be of any suitable construction but preferably in the form of a perforated plate which is wide enough to bear against the upper side of the bundles of shingles within the basket or other articles which are to be impregnated, stained or coated with paint This presser is guided in its vertical movements by means of two upright guiding and lifting rods 44 sliding vertically through suitable stuffing boxes 45 in the cover of the tank and connected at their lower ends with the upper side of the presser.

The upward movement of the presser is preferably limited by stops 46 arranged on the underside of the tank cover on opposite sides of the guide cylinder 24, as shown in Fig. 4. Mounted horizontally and transversely above the tank cover 13 is a rock shaft 47 which is journaled in bearings 48 formed on a frame 49 rising from the upper side of the tank cover. Adjacent to its opposite ends this rock shaft is provided with two inwardly projecting rock arms 50 which are arranged on opposite sides of the cover lifting rod 25 and each of these arms being connected at its free end by means of upright links 51 with the upper end of one of the presser lifting rods 44.

Between its ends the rock shaft 48 is provided with an outwardly projecting rock arm 52 the outer end of which is pivotally connected with a vertically moving shifting rod 53. The two inner arms 50, 50 and the outer arm 52 which are connected by the rock shaft 47 in effect produces a forked rock lever whereby motion is transmitted from the shifting rod 53 to the presser 43.

The upper part of the shifting rod 53 passes through a stationary stop 54 which is mounted on an adjacent stationary part of the frame of the machine and above and below this stationary stop the shifting rod 53 is provided with an upper movable stop 55 and a lower movable stop 56.

In the uppermost position of the tank cover the lower movable stop 56 is in engagement with the underside of the fixed stop 54, and the arms 52 and 50 of the rock lever connected with the rod 53 are turned in a direction so that the outer arm is depressed and the inner arms 50 are elevated whereby the presser 43 is raised out of engagement from

the upper side of the bundles of shingles, as shown by full lines in Figs. 1, 4 and 6.

During the initial part of the downward motion of the cover toward the upper end of the tank for the purpose of closing the latter the shifting rod 53 is held with its lower stop 56 in engagement with the underside of the fixed stop 54 due to the weight of the presser 43, but during such movement the rock arms 52 and 50 turn about the lower end of the shifting rod 53 as a fulcrum so that the inner end of this rock lever which is formed by said arms and which is connected with the presser, will be turned downwardly, and the presser will also move downwardly to some extent toward the upper side of the bundles in the basket, as shown by dotted lines in Fig. 6. This downward movement of the presser and the rocking movement of the lever formed by the arms 52 and 50 will continue until the presser 43 engages with the upper end of the bundles in the basket, and thereafter the presser and the shifting rod 53 move downwardly in unison with the basket so that the shifting rod 53 slides downwardly through the stationary stop 54. When the basket reaches the lower end of its movement the upper stop 55 of the shifting rod 53 engages with the upper side of the stationary stop 54, as shown by full lines in Fig. 7, thereby holding the presser 43 positively in its lowered position in engagement with the bundles in the basket and preventing the buoyancy of the bundles from floating them in the liquid.

As the basket is raised subsequent to the submergence of the bundles in the liquid the presser plate remains at rest against the upper side of the bundles and the shifting rod 53 will slide upwardly through the stationary stop 54 until the lower movable stop 56 engages with the underside of the stationary stop 54, after which the upward movement of the shifting rod 53 will be arrested and thereby cause the rock lever formed by the arms 52 and 50 to be turned as the cover continues its upward movement, and thereby raise the presser 43 from the top of the bundles and release the latter during the last part of the upward movement of the tank cover, as shown by full lines in Fig. 6.

The upper and lower stops 55 and 56 on the shifting rod 53 can be raised or lowered on this rod so that the engagement of the movable stops with the stationary stop can be regulated to suit the height of the bundles or other articles which are carried in the basket for submergence in the liquid and also to vary the amount of lift of the presser from the article under treatment to suit different conditions.

The operation of lowering the presser upon the bundles of shingles or the like and lifting the same therefrom is effected automatically during the lowering or raising of the tank cover so that no attention is required on the part of the operator for performing this function on the machine.

After the basket has been elevated and the presser has been disengaged from the top of the bundles in the manner described, the operator pushes the upper end of the basket rearwardly so that it turns into a rearwardly inclined position and discharges the bundles contained therein over the rear side of the tank to an apparatus which subsequently operates upon the bundles, such for example as a machine which operates to remove the excess liquid stain from the shingles preparatory to stacking or storing the same ready for shipment to the trade.

As a whole this machine is very compact in construction and also very simple and light, and it also requires a minimum amount of manual effort to control its operation, thereby enabling the output of the machine to be materially increased and the cost of the work to be reduced accordingly.

I claim as my invention:—

1. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, and a basket for receiving said bundles and dipping the same into said liquid and discharging the same toward the side of the tank, said basket being pivotally mounted on the underside of said cover so as to be capable of turning into an upright position over said tank and also into a position in which it projects laterally beyond the side of said tank, the pivotal connection between said basket and cover being arranged on one side of the center of gravity of said basket when the latter is in its upright position.

2. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket arranged on the underside of said cover and adapted to receive said bundles for dipping them into said liquid and discharging the same at one side of the tank and said basket having a bottom, side walls and a rear wall immovably connected and an open front and top, and supporting hangers depending from said cover and pivotally connected with the side walls of the basket for turning the latter about a horizontal axis arranged in rear of the center of gravity of the basket when the same is in an upright position.

3. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket arranged on the

underside of said cover and adapted to receive said bundles for dipping them into said liquid and discharging the same at one side of the tank and said basket having a bottom, side walls and a rear wall immovably connected and an open front and top, supporting hangers depending from said cover and pivotally connected with the side walls of the basket for turning the latter about a horizontal axis arranged in rear of the center of gravity of the basket when the same is in an upright position, and stop means for limiting the upward and forward movement of said basket relative to the tank.

4. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket arranged on the underside of said cover and adapted to receive said bundles for dipping them into said liquid and discharging the same at one side of the tank and said basket having a bottom, side walls and a rear wall immovably connected and an open front and top, supporting hangers depending from said cover and pivotally connected with the side walls of the basket for turning the latter about a horizontal axis arranged in rear of the center of gravity of the basket when the same is in an upright position, stop means for limiting the upward and forward movement of said basket relative to the tank, and a counterbalancing spring connecting said basket with its support.

5. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket mounted on the underside of said cover and having a bottom adapted to support said bundles while dipping them in the liquid, and means for holding down said bundles in the baskets while submerged in the liquid, comprising a presser movable toward and from the top of the bundles and guided on said cover.

6. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket mounted on the underside of said cover and having a bottom adapted to support said bundles while dipping them in the liquid, and means for holding down said bundles in the baskets while submerged in the liquid, comprising a presser movable toward and from the top of the bundles and guided on said cover, and means for lowering said presser on the bundles when the basket is lowered and raising said presser from the bundles when the basket is raised.

7. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket mounted on the underside of said cover and having a bottom adapted to support said bundles while dipping them in the liquid, and means for holding down said bundles in the baskets while submerged in the liquid, comprising a presser movable toward and from the top of the bundles and guided on said cover, and means for lowering said presser on the bundles when the basket is lowered and raising said presser from the bundles when the basket is raised, including a vertically movable shifting rod operatively connected with said presser, spaced stops arranged on said rod, and a stationary stop adapted to be engaged alternately by said spaced stops.

8. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket mounted on the underside of said cover and having a bottom adapted to support said bundles while dipping them in the liquid, and means for holding down said bundles in the baskets while submerged in the liquid, comprising a vertically movable guide rod sliding through said cover and connected at its lower end with said presser, a rock lever pivotally mounted on said cover, a link connecting one arm of said lever with said guide rod, a shifting rod connected with the other arm of said lever, spaced stops on said shifting rod, and a stationary stop adapted to be engaged alternately by said spaced stops.

9. An apparatus for impregnating bundles of shingles and the like, comprising a tank adapted to contain the impregnating liquid and having an upper inlet, a cover movable toward and from said tank for closing and opening said inlet, a basket mounted on the underside of said cover and having a bottom adapted to support said bundles while dipping them in the liquid, and means for holding down said bundles in the baskets while submerged in the liquid, comprising two vertically movable guide rods sliding through said cover and each connected at its lower end with said presser, a rock shaft journaled horizontally in bearings on the upper side of said cover and having two inwardly projecting arms and a single outwardly projecting arm, links connecting each of said inwardly projecting arms with the upper end of one of said guide rods, a vertically movable shifting rod connected at its lower end with said single rock arm, a stationary stop in which said shifting rod is guided, and up-

per and lower movable stops arranged on said shifting rod above and below said stationary stop, and capable of vertical adjustment on said shifting rod.

In testimony whereof I hereby affix my signature.

HARRY E. GOSCH.